**Before the**
**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, D.C. 20554**

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| Wireless Telecommunications Bureau seeks | ) | |
| comment on petitions regarding the use of signal | ) | WT Docket No. 10-4 |
| boosters and other signal amplification techniques | ) | Released Jan 6, 2010 |
| used with wireless services | ) | |
| | ) | |
| _____ | ) | |

# REPLY COMMENTS OF MILLARD/RAINES PARTNERSHIP ("SMART BOOSTER")


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# I. Introduction and Summary

Michael Millard and Jeremy K. Raines, Ph.D., P.E., inventors of the Smart Booster, are pleased to submit Reply Comments to WT Docket 10-4.

More than 600 comments have been received. Of these, the overwhelming majority support the continued use of boosters to maintain communications where service is otherwise unusable or only marginally usable.

The Smart Booster, thus far in these proceedings, is the only solution that provides consumers the coverage they demand and deserve, eliminates interference, complies fully with FCC blanket licensing, and maintains carrier control of their respective spectrum. It is remarkably simple to bring to market. Additionally, practically all of the data necessary for its Memory Card are already in the public domain.

In these Reply Comments, we wish to emphasize that:

1. Granting the CTIA petition, which seeks to affirm in a Declaratory Ruling that all boosters must be authorized by carriers, would be a serious error and would not serve the public interest. It would be equivalent to an unconditional ban on all mobile boosters, and on almost all fixed boosters, for many reasons to be discussed shortly. Since the debut of the first cellular network in 1983, the industry has had 27 years to provide service to rural America and users in similar situations where service is unusable. In that regard, the

industry has utterly failed. Some sort of booster is the only practical way to deliver service to those customers.

2. The Smart Booster, though certainly novel, is also thoroughly practical. The data needed for its Memory Card are available in the public domain. Objections that Smart Booster technology is too advanced or too complicated are completely unfounded. In fact, the Smart Booster has already been test driven and the results exceeded expectations. All that remains is for the Commission to establish appropriate rules to allow its use on the networks.

3. If the existing FCC Rules preclude mobile handset boosters, then they are long past due for a revision and update, for at least two compelling reasons. First, there is undeniable and legitimate consumer demand for wireless communication at many locations where service is presently unusable or marginally usable. It is worth repeating that, since the debut of the first cellular network in 1983, industry has had 27 years to provide service at these locations, and it has completely failed. Second, technology has improved at an exponential pace so that intelligent boosters, such as the Smart Booster, are eminently practical. They can provide the desired service, and will not interfere with existing networks, or FCC blanket licensing objectives.

## II. Reply Comments to CTIA / Industry Position

In its comments, CTIA has argued that existing FCC Rules require subscribers to obtain licensee consent prior to the purchase and operation of booster equipment. We agree. However, Smart Booster believes any carrier authorization scheme that is not automatically built into the technology of the device will be unenforceable and otherwise unworkable for the many reasons described in its Comments.[1]

**It would be a serious mistake to grant the CTIA petition because such a ruling would result in a complete ban of mobile boosters, and most in-building boosters, for the reasons that follow.**

Existing FCC Rules require the industry to maintain operational control of all devices on its networks. The reasons for this requirement are logical. First, they enable blanket licensing of those devices on the network. Second, they tend to prevent any interference those devices might generate. We believe CTIA's interpretation of these rules to be correct.

Unfortunately, all currently OET-certified boosters available to consumers cannot be controlled by the licensee because they are broadband and radiate into the spectrum

licensed to other carriers. Consequently, CTIA may as well ask for a total ban on all broadband boosters.

In view of the above, granting the CTIA petition will remove ALL boosters from mobile use, including cars, trucks, boats, RV's, tow trucks, police cars, fire trucks and ambulances. Clearly eliminating boosters as self-help coverage alternatives does not serve the public interest, convenience and necessity.

We do not disagree with CTIA's interpretation of existing FCC Rules relating to carrier stewardship of licensed spectrum, particularly as it relates to minimizing and controlling harmful interference. However, a Declaratory Ruling supporting CTIA's position is not going to resolve the underlying problem, namely, that of inadequate service in rural and similarly underserved areas. We believe such a Ruling will only drive booster manufacturers underground. Consumers will continue to obtain them from offshore sources. Consequently, the need for costly FCC enforcement action on a case-by-case basis will escalate.

We reiterate a statement from our original Comments:

***"Rigidly enforcing existing rules does not solve the practical problem of unusable service that frustrates the public interest."***

[1] See Comments of Millard/Raines Partnership (Smart Booster), WT Docket 10-4, pp. 40-42, filed February 4, 2010.

Cellular and PCS communications are now mature technologies, and there can be no justification for excluding anyone from access to them. The reason there are so many underserved areas is that it makes no economic sense to construct expensive base stations in sparely populated areas. However, it makes perfect sense to deploy boosters there. We envision that intelligent boosters, far from being accessories, will become an integral part of existing and future wireless networks.

## III. Reply Comments to Public Safety Position

Comments from rural police, fire and EMS departments support booster use. In many cases, boosters are essential. Departments have stated that without them, they cannot cover their geographic territories.[2] This supports our previous contention that intelligent boosters must become an integral part of wireless networks.

Comments from metropolitan departments attesting to interference in urban markets, where signal amplification is totally unnecessary, affirm the need for an intelligent booster that can automatically deactivate in those areas.

*[Remainder of page intentionally blank.]*

[2] See Exhibit 1 for a listing of Comments received from public safety entities supporting mobile handset boosters.

## IV. Boosters Are the Obvious Choice for Fringe Reception Areas

The industry has not shown a willingness to exchange booster equipment for other devices that would provide coverage in fringe reception areas. Actually, the industry has no solution for improving mobile reception in these areas. Although femtocells are mentioned, in fact, they will never be a solution to mobile reception problems because vehicles do not have the requisite broadband connections.

Granting the CTIA petition will similarly eliminate in-building boosters. Femtocells are not a viable alternative in many rural areas because the requisite broadband access is not available. Likewise, in-building radiation systems or distributed antenna systems are expensive for the carrier to install and maintain and they require burdensome, time-consuming case-by-case authorizations. It is not clear that carriers would be willing to expend the necessary time and effort where only a few subscribers are present.

In view of the above, if boosters are removed from the market place, all of the remaining coverage solutions available now are completely inadequate to satisfy consumer needs. Further, removing handset boosters from the public's reach will transfer the responsibility for improved coverage of rural America to the very carriers which have consistently failed to provide it.

Carriers have recently announced major capital expense initiatives, in many instances approaching record levels of network investment. Closer examination, however, reveals

that the majority of those funds are allocated to improving network capacity for high-speed data in existing major markets, and not to establishing or improving coverage in rural areas.

The above is perfectly reasonable from the point of view of the carriers because there are not enough potential subscribers to justify the expense of new cell sites in sparsely populated areas. If that is the case, carriers will never adequately serve rural America. **Boosters are the only cost effective alternative.**

Given the carriers' looming network capacity crisis brought about by the public's ravenous appetite for the iPhone and similar smartphones, it is very likely that the economics of supply and demand will only serve to widen the digital divide separating rural America from other markets. This divide is already unacceptable.

We urge the Commission to deny the CTIA Petition and to instead seek a remedy that simultaneously resolves the interference problem, complies with blanket licensing, keeps carriers in control of their spectrum, and provides better coverage to mobile and in-building subscribers in rural areas, and at all other locations where signal strength falls below the usable threshold.

## V. Smart Booster Utilizes Data Currently Available in the Public Domain

Comments filed in these proceedings by Smart Booster are the first public disclosure of the technology since it was successfully test driven on a major carrier's South Florida network. Since filing, we have received inquires from carriers relating to certain operational details of the Smart Booster device. In the following, we elaborate on those details.

Ideally, the database that controls the operation of the Smart Booster comes from carriers' engineering departments; however, there are alternatives if carriers choose not to actively participate. It is possible to use CGSA boundary data filed under existing regulations with the FCC. These data are already collected by the carriers as part of their normal operations. Note that these same data are used to create the online coverage maps, made available by the carriers to consumers via the Internet.

For example, Figure 1 shows the market coverage for Sprint / Nextel service in Houston, TX. Not only does the web site show street level radio coverage by type of device, it also provides information on recently constructed towers and planned new construction. This level of information exceeds that needed to operate the Smart Booster.

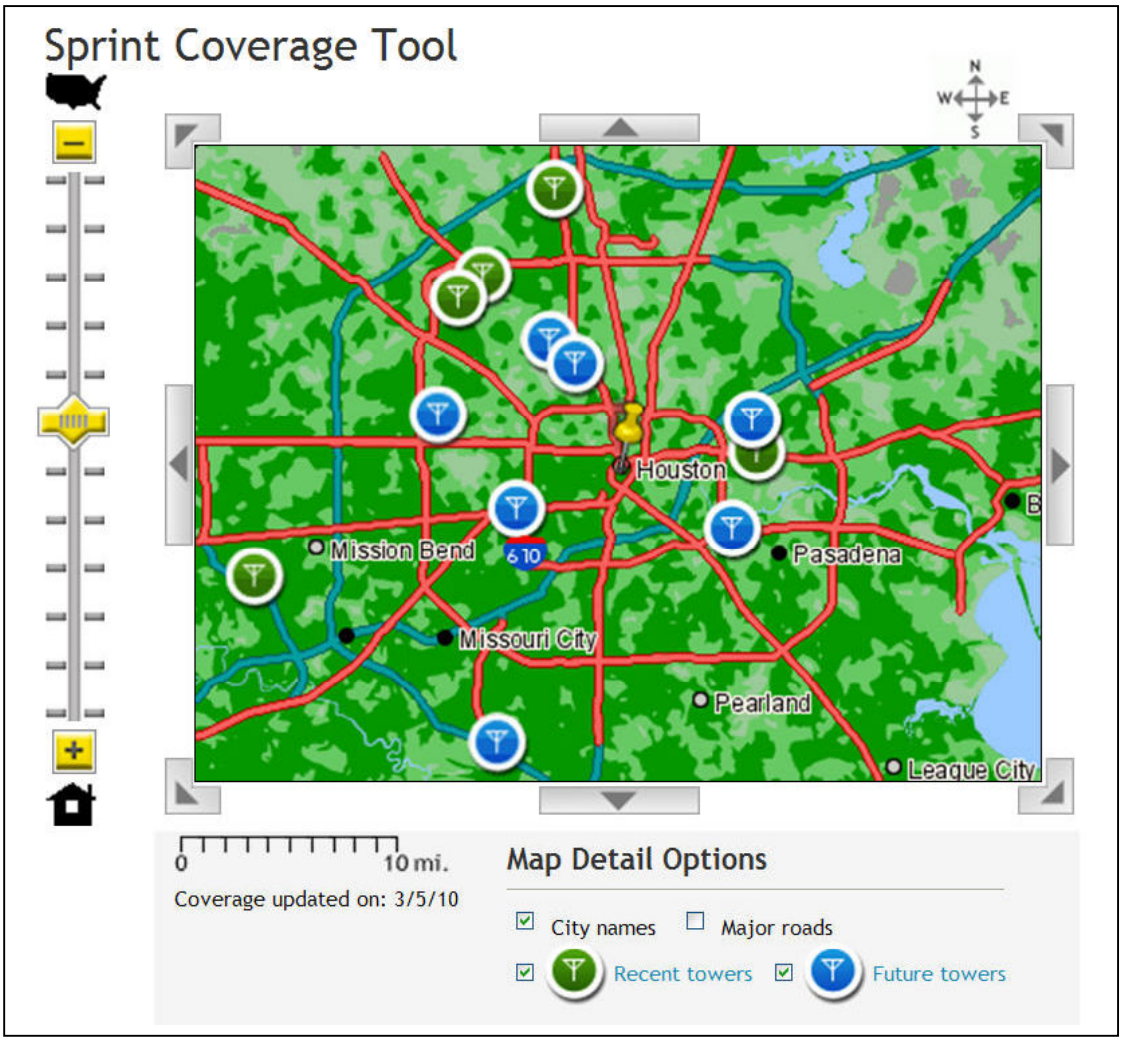


Figure 1 - Market level detail of network coverage, recent tower construction and proposed future towers.[3]

Zooming in even further, as shown in Figure 2 on the following page, precise street level location data is provided.

*[Remainder of page intentionally blank.]*

[3] Link: http://coverage.sprint.com/IMPACT.jsp?language=EN
(Retrieved March 5, 2010, with map centered on Houston, TX)

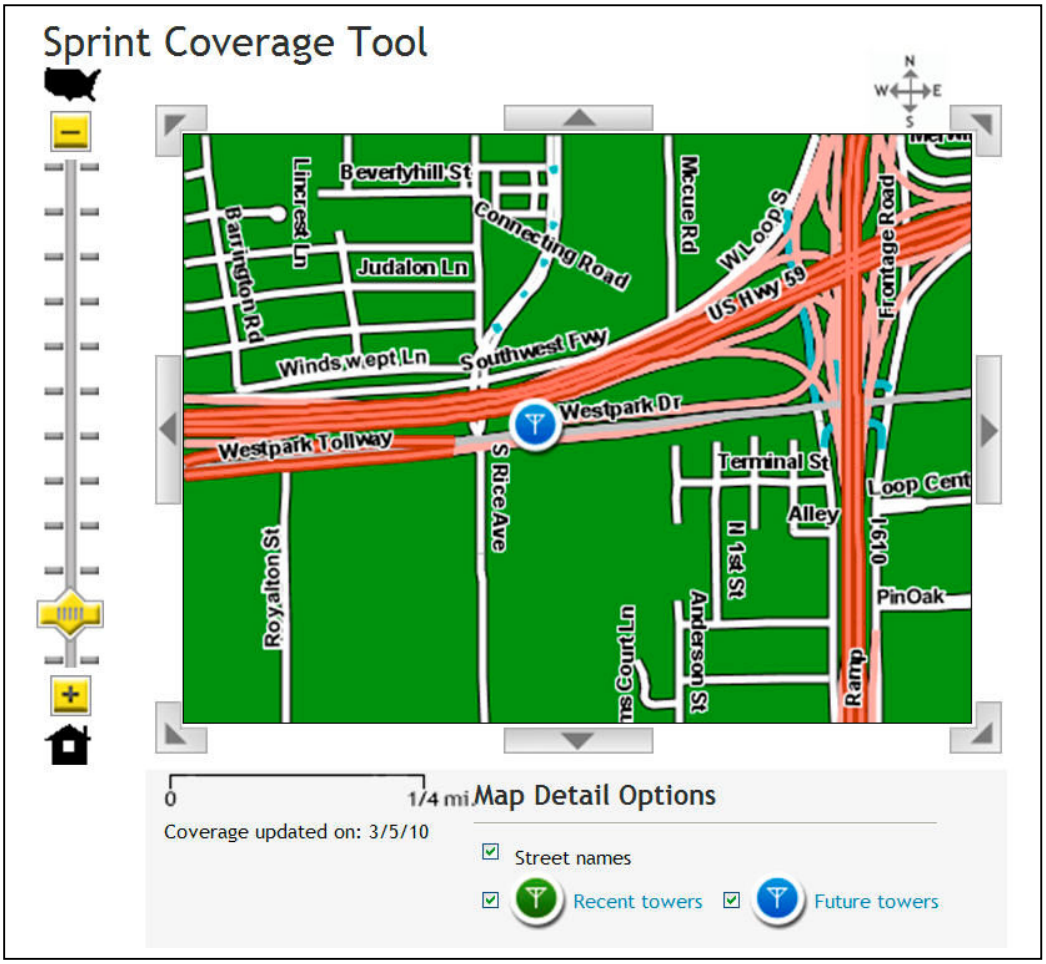


Figure 2 – Street level detail of network coverage, recent tower construction and proposed future towers.

Note that the Smart Booster DOES NOT need to know where the actual tower sites are located, even though this information is generally in the public domain. This refutes any objections by the carriers that Smart Booster requires the disclosure of proprietary or closely guarded information.

The Smart Booster only needs to know whether or not it should be activated, and in which spectrum, at its current geographical location. It follows that the Smart Booster

database need not contain any information that is not already in the public domain and accessible on a carrier's web site.

The Commission should note that all major carriers already provide coverage maps as part of their online marketing efforts. Of these, a majority provide street level detail. Some provide geographic information relating to new or recently constructed cell sites. This level of coverage detail is sufficient for operation of the Smart Booster.

| Carrier | Approximate Number of Subscribers[4] | Coverage Maps Available Online? | Maps Show Street Level Coverage Details? | Maps Show Future/Planned Cell Site Construction |
|---|---|---|---|---|
| Verizon | 91.2 Million | Yes | Yes | No |
| AT&T | 85.1 Million | Yes | Yes | No |
| Sprint | 48.1 Million | Yes | Yes | Yes |
| T-Mobile | 33.4 Million | Yes | Yes | No |
| Trac-Fone[5] | 14.4 Million | Yes | No | No |
| Metro-PCS | 6.6 Million | Yes | Yes | Yes |
| US Cellular | 6.1 Million | Yes | No | No |
| Cricket / Jump | 4.9 Million | Yes | Yes | Yes |

Table 1 - Online coverage map availability by network provider.

We anticipate that some carriers may be concerned with competitive issues or potential Homeland Security interests relating to the distribution of the Smart Booster Memory Card. In response, we emphasize that the Smart Booster database does not contain any additional information that is not already disclosed in coverage maps published on the carriers public web sites. Further, the data on the Memory Card will be encrypted, and the level of encryption can be arbitrarily specified to satisfy the concerns of carriers.

[4] Source: http://en.wikipedia.org/wiki/List_of_mobile_network_operators_of_the_Americas#United_States Retrieved March 3, 2010

[5] Trac-Fone is a Mobile Virtual Network Operator (MVNO).

We also anticipate that some carriers may be under the false impression that it will prove too difficult to keep up with the network changes. Network changes include the construction of new cell sites, changes to existing cell sites, and the activation of new channels (1.25 MHz or 5 MHz carriers) within the cellular or PCS spectrum blocks licensed to a particular carrier.

As a practical matter the VAST MAJORITY of all network changes occur within or at the perimeters of major metropolitan areas, where the Smart Booster would automatically deactivate. So, most network changes will have no effect on how the Smart Booster operates. Indeed, as illustrated in the Sprint / Nextel online coverage maps, few if any towers are proposed for rural areas. As such, none of these network changes affect the Smart Booster database, and there is no concern about it being current.

Figure 3 is a simplified visualization of coverage based upon tower locations. It is seen that the Smart Booster is deactivated under the coverage cloud regardless of changes within the cloud. Carriers need only provide updates concerning construction outside the cloud.

*[Remainder of page intentionally blank.]*

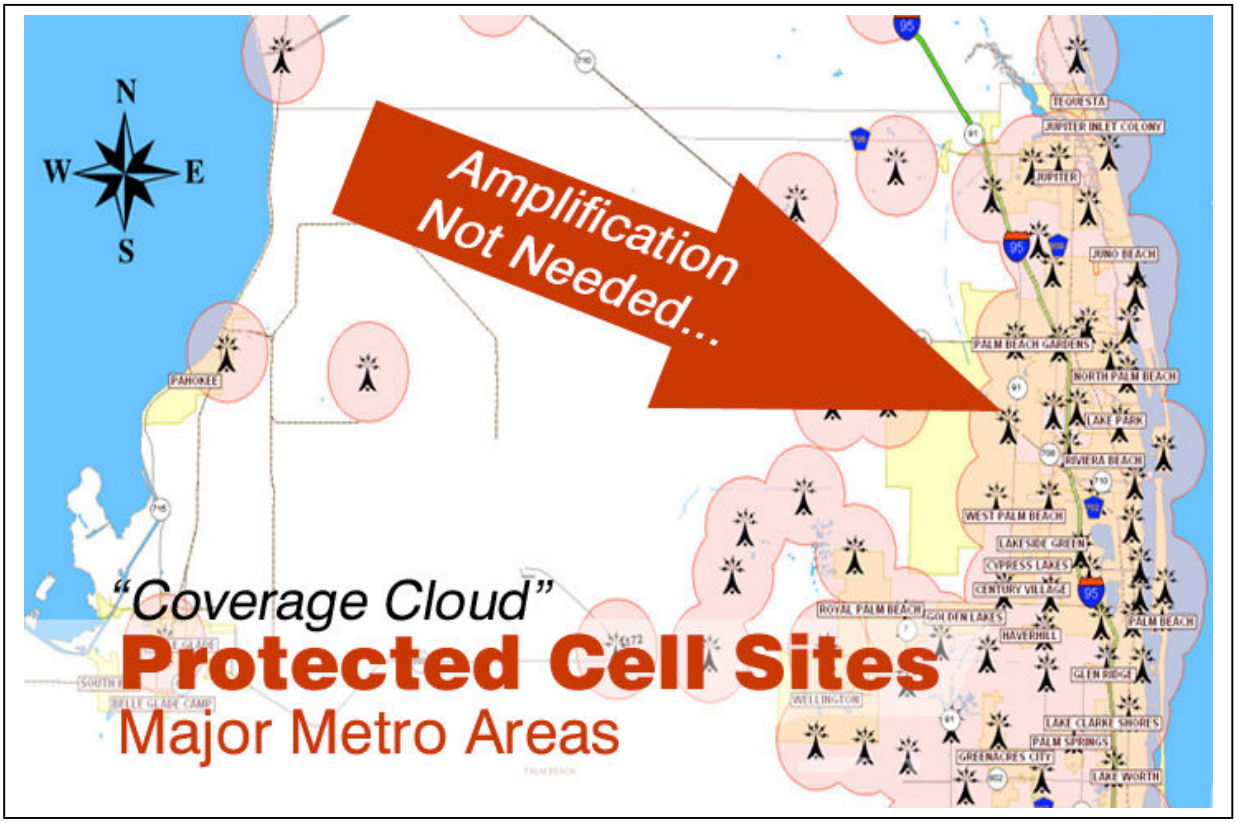


Figure 3 – Tower locations define a coverage cloud within which Smart Booster is deactivated, and outside of which it is activated.

The astute reader will observe that the street level coverage maps available on the carriers' web sites contain far greater detail than does Figure 3. This illustrates that carriers are indeed able to keep up with network changes far exceeding the level of detail necessary for accurate and efficient Smart Booster operation. Because carriers are already collecting this information, it should not prove burdensome to repurpose it for use in the Smart Booster database.

*[Remainder of page intentionally blank.]*

## VI. Conclusions

It is timely and fitting that the FCC has requested Comments relating to boosters for the cellular, PCS, and other wireless services. Compared with such services nearly three decades ago, they are now mature, widely accepted, and should be accessible to all consumers at all locations. Intelligent booster technology, such as the Smart Booster, would guarantee that accessibility without harming the networks.

The chief obstacles to the widespread deployment of intelligent boosters are rules that were formulated at the birth of the industry, and now desperately need to be revised and updated; and a predictable resistance to change on the part of CTIA and its member carriers. Accordingly, we urge the Commission to bring its rules up to date. Concurrently, we suggest that the industry make a serious effort to understand the benefits that intelligent booster technology can bring both to carriers and consumers. We firmly believe that intelligent boosters are a win-win situation for all affected parties.

Intelligent boosters will most likely become an integral part of all future wireless networks. To be sure, there is no economic incentive to build traditional base stations in sparsely populated areas, even though there is undeniable and legitimate consumer demand there. The base stations are simply too expensive to construct and maintain. In contrast, intelligent boosters are mobile and affordable. They extend service to locations where base stations will never be built.

Further, intelligent boosters are not an economic burden on the networks. Even the most conservative models demonstrate that the creation, distribution, and maintenance of the Memory Card database for the Smart Booster is a highly profitable business. This enterprise should be welcome by the carriers or by a third party endorsed by them.

It is time for the next step in the evolution of wireless communication, and that step is the intelligent handset booster.

Respectfully submitted,

Dr. Jeremy K. Raines, Ph.D., P.E.
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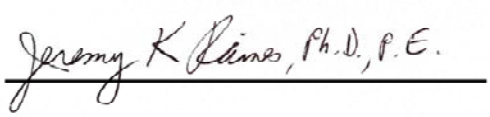
By: 

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Dated: March 8, 2010.
VIA: ECFS.

# EXHIBIT 1

Partial Listing of Comments Received from Public Safety Entities Supporting Handset Boosters

| Date Received | Filer | Entity | City / Department |
|---|---|---|---|
| 1/14/10 | Brian Hunt | Yavapai County Sheriffs Office | Prescott, AZ |
| 1/25/10 | Kent Satterwhite, P.E. | Canadian River Municipal Water Authority | Sanford, TX |
| 1/25/10 | John Laursen | Uintah County Sheriffs Dept. | Vernal, UT |
| 1/26/10 | Robert DeMann | Glades Correctional Development Corp. | Moore Haven, FL |
| 1/26/10 | Brenton W. MacAloney, Fire Chief | Town of Westminster, MA | Westminster, MA |
| 1/26/10 | Thomas Nicholson, Federal Park Ranger | US Army Corp of Engineers | Sutton Lake, WV |
| 1/27/10 | Jim Rassbach | Fire, EMS, Police | Eau Claire, WI |
| 1/29/10 | Phillip Bartman (Radicom) | Radio shop for Suburban Police & Fire Departments | Johnsburg, IL |
| 1/29/10 | Mark Wagner, Local Emergency Planning Committee Chair. | Pawnee County Emergency Management | Larned, KS |
| 2/3/10 | Lt. Steve Farmer | Florida Fish and Wildlife Commission | Lake City, FL |
| 2/3/10 | Capt. Scott Aldrich | US Army Corps of Engineers | Detroit Office (Great Lakes Region) |
| 2/4/10 | Mayor A. J. Jones | Lunenburg County Sheriffs Office | Lunenburg, VA |
| 2/4/10 | Robert Bertram, Fire Chief | Florissant Fire Protection District | Florissant, CO |
| 2/3/10 | Cranford Jordan, Fire Chief | | Winnfield, LA |
| 2/3/10 | Jana McCarley | City of Amarillo, TX, Emergency Operations Center | Amarillo, TX |
| 2/4/10 | Officer Eric Keefer | US Department of the Interior, Bureau of Land Management | Bishop, CA |
| 2/12/10 | Lt. Cory Pulsipher | Washington County Sheriffs Office | Hurricane, UT |
| 2/12/10 | | West Side Volunteer Fire Department | Nanticoke, MD |
| 2/5/10 | Annette Looper | Macon County Sheriffs Department | East Lafayette, TN |
| 2/5/10 | G. Scott McDermid | Wakula County Public Safety | Crawfordville, FL |

# CERTIFICATE OF SERVICE

I, Jeremy K. Raines, Ph.D., P.E., do hereby certify that on this 4th day of February, 2010, I caused copies of the foregoing "Comments of Millard/Raines Partnership" to be delivered to the following via electronic mail.

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Jeremy K Raines, Ph.D., P.E.

Jeremy K. Raines, Ph.D., P.E.
For Millard / Raines Partnership

**Sprint web site notice regarding coverage maps:**

Our [Sprint] coverage maps provide high level estimates of our coverage areas when using your device outdoors under optimal conditions. Coverage isn't available everywhere.

Estimating wireless coverage and signal strength is not an exact science.

There are gaps in coverage within our estimated coverage areas that, along with other factors both within and beyond our control (network problems, software, signal strength, your wireless device, structures, buildings, weather, geography, topography, etc.), will result in dropped and blocked connections, slower data speeds, or otherwise impact the quality of services.

Services that rely on location information, such as E911 and GPS navigation, depend on your device's ability to acquire satellite signals (typically not available indoors) and network coverage. E911 services also depend local emergency service provider systems/support. Estimated
future coverage subject to change.

Link: http://www.nextel.com/en/coverage/support/important_coverage_info_popup.shtml

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